Richard Frank Meraz

CONTACT INFORMATION

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RESEARCH INTERESTS

RNA-informatics (structure classification and prediction, gene-finding methods). Kernel machine-learning methods. Applications of graph/network theory in biology. Biological ontologies. Probabilistic methods for biological sequence analysis. Metals and cellular processes.

EDUCATION

California State University, Long Beach, California USA

B.S, Mathematics (expected June 2005)

RESEARCH EXPERIENCE

Lawrence Berkeley National Laboratory, Berkeley, California USA

Research Fellow, Systems Engineer II **January 2001 - present**

Project-lead for "Machine Learning Approaches to RNA Genefinding" in Dr. Stephen R. Holbrook's research group. Authored publications and assisted with grant-writing. Collaborated on additional projects in computational biology with Dr. Chris Ding in the Computational Science Division. Setup and maintained group software and computational resources, including ten GNU/Linux desktop machines in a grid-computing environment. Acted as research supervisor and mentor for undergraduate students.

Molecular Ecology Institute, Long Beach, California USA

Student Research Fellow **January 1996 - May 1999**

Conducted research involving applications of Inductively Coupled Plasma Mass Spectrometry (ICPMS) to determine the mechanisms of trace-metal metabolism and detoxification in marine organisms.

PUBLICATIONS

Karklin Y*, Meraz RF*, Holbrook SR. Classification of non-coding RNA using graph representations of secondary structure. Pac. Symp. Biocomput. In Press. *Equal Contributors.

Ding C, He X, Meraz RF, Holbrook SR. A unified representation of multiprotein complex data for modeling interaction networks. Proteins. 2004;57(1):99-108

Meraz RF*, He X*, Ding C, Holbrook SR. Positive sample only learning (PSOL) for predicting RNA genes in *E. Coli*. Proc. IEEE CSB. 2004;535-538. *Equal Contributors.

Holbrook SR, Meraz RF, Carter RJ. "Computational RNA Genefinding" in Nature Encyclopedia of the Human Genome. 2004; Nature Press, New York

Mason AZ, and Meraz RF. Cytosolic Metal Speciation Studies by Sequential, On-line SE-IE/HPLC-ICP-MS. Marine Environ. Res. 1998;46(1):573-577

PAPERS IN SUBMISSION

Meraz RF, He X, Ding C, Holbrook SR. A machine learning approach to predicting RNA genes in bacteria and a bioinformatics comparison to previous computational assays. Submitted to BMC Bioinformatics.

PAPERS IN PREPARATION

Meraz RF and Holbrook SR. Multiple Instance Learning of non-coding RNA family using graph representations of thermodynamically suboptimal secondary structures.

Meraz RF, Ding C, Holbrook SR. A Min-max cut algorithm for finding RNA structural domains using contraction-graphs.

Conferences and Presentations

10th Annual Pacific Symposium of Biocomputing, Big Island of Hawaii (Lecture), "Classification of Non-Coding RNA Using Graph Representations of Secondary Structure", January 2005

3rd Annual IEEE Conference on Computational Systems Bioinformatics (Poster), Stanford University, Palo Alto, CA, August 2004

9th Annual Meeting of the RNA Society, University of Wisconsin (Poster), Madison WI, June 2004

Invited Lecture, Department of Biological Sciences, California State University, Long Beach CA, "Three Problems in Computational Biology", May 2004

Invited Lecture, Department of Biotechnology, University of Southern Denmark, Odense, Denmark, "Cytosolic Metal Speciation Studies of Metalloenzymes with HPLC-ICPMS", August 1999

California State University Statewide Competition for Student Academic Research (Lecture), Cal State Bakersfield, Bakersfield, CA, May 1999

NIH-NIGMS National Minority Research Conference (Plenary Lecture), "ICPMS study of copper metabolism in the marine mollusk *Littorina littorea*", New York, NY, November 1998

Awards and Fellowships

College of Science and Engineering Education Fellowship, Lawrence Berkeley National Laboratory, January 2001 - June 2003

Department of Energy Pre-Service Teacher Fellowship, Lawrence Berkeley National Laboratory, June - September 2000

Most Outstanding Student Research, California State University Statewide Research Competition (Natural Sciences and Mathematics), 1999

Most Outstanding Student Research, NIH-NIGMS MARC/MBRS Nationwide Competition and Symposium for Undergraduate Research (New York), 1998

NIH-NIGMS MARC Research Fellowship, June 1997 - September 1999

NIH-NIGMS MBRS Research Fellowship, January 1996 - June 1997

President's Scholarship, California State University Long Beach, 1995 - 1999

Teaching

The Princeton Review, Irvine, California USA

Staff Instructor **January 1999 - December 2000**

Taught preparatory courses for the SAT general and subject exams (Math I, Math IIc, English/Writing). Class sizes ranged from five - fifty students.

Computer Skills

- Languages: *Advanced* - Python, Perl, C; *Intermediate* - Java, SQL, bash
- Applications: Numerical Python (Numpy), Matlab, Openoffice.org, LaTeX
- Operating Systems: GNU/Linux

Personal

- Recent reading: Noam Chomsky - *Hegemony or Survival*, Stephen J. Gould - *Dinosaur in a Haystack*, Paramhansa Yogananda - *Autobiography of a Yogi*, George Lakoff - *Moral Politics*
- Random iPod music: Miles Davis - *Miles Ahead*, Keith Jarrett - *La Scala*, Radiohead - *Hail to the Thief*, Bob Dylan - *Time Out of Mind*, David Bowie - *Reality*, Queen - *A Night at the Opera*
- For fun: hiking, biking with my dog, reading (especially biology, religion, politics, and technical books from O'Reilly Press), programming in Python, my Ubuntu GNU/Linux laptop, chess, documentary films
- WWW: alternet, democracynow, nytimes, pubmed, google, slashdot, chomsky.info, cspan, kpfa, oreillynet